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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,000	01/17/2007	Hiroyuki Kanbara	36856.1455	1561

54066 7590 11/16/2011

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EXAMINER	
EOFF, ANCA	
ART UNIT	**PAPER NUMBER**
1722	

NOTIFICATION DATE	DELIVERY MODE
11/16/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/596,000	KANBARA ET AL.	
	Examiner	Art Unit	
	ANCA EOFF	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 September 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *20,23-29,31 and 34-36* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *20,23-29,31 and 34-36* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 20, 23-29, 31 and 34-36 are pending. Claims 1-19, 21, 22, 30, 32 and 33 have been cancelled.

2. The foreign priority application JP 2003-393551 filed on November 25, 2003 was received and acknowledged.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 31, 34, 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiura et al. (JP 2002-270036).

With regard to claim 31, Sugiura et al. teach a photocuring conductor paste comprising:

- 75-90% by weight of a conductive powder material (par.0029 and par.0011), and

- 10-30% by weight of an organic vehicle (par.0029).

The organic vehicle comprises a photopolymerizable monomer and a photopolymerization initiator in an amount of 0.1-30% by weight of the photopolymerizable monomer (par.0019 and par.0025). The organic vehicle may also

comprise a polymeric binder in an amount of less that 10% by weight of the photopolymerizable mononomer (par.0025).

The photopolymerizable monomer of Sugiura et al. is equivalent to the photosensitive monomer of claim 31 and the polymeric binder of Sugiura et al. is equivalent to the polymer of claim 31.

Sugiura et al. do not specifically teach the photosensitive paste of claim 31 of the instant application. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain the paste of claim 31, based on Sugiura's teachings regarding the components of the paste and the amount of each component.

If the photopolymerization initiator is about 10% by weight of the photopolymerizable monomer (see Embodiments 1 and 2 in par.0034-0035) and the binder is 5% by weight of the photopolymerizable monomer (see the preferred range for the binder in par.0025), then the organic vehicle comprises:

- 87% by weight of the photopolymerizable monomer,

- 8.7% by weight of the photopolymerization initiator and

-4.3 % by weight of the binder.

In this case, the ratio of a photopolymerizable monomer / (photopolymerizable monomer + binder) = 0.952, which satisfies the limitation of the ratio of photosensitive monomer/ (photosensitive monomer + polymer) of 0.90 of more of claim 31.

If the photosensitive paste contains 75% by weight of conductive powder (within the range of 75-90% by weight in par.0011 and par.0029) and 25% by weight of the organic vehicle (within the range of 10-30% by weight in par.0029) and the organic

vehicle comprises 87% by weight of the photopolymerizable monomer, 8.7% by weight of the photopolymerization initiator and 4.3 % by weight of the binder, the paste comprises:

- 75% by weight of conductive powder, which is within the range for conductive powder of claim 31,

-about 22% of the photopolymerizable monomer, which is within the range of claim 31 for a photosensitive monomer;

-about 2% of the photopolymerization initiator, which is within the range of claim 31 for a photopolymerization initiator.

Sugiura et al. further teach that the photopolymerizable monomer may be dipentaerythritol pentaacrylate (par. 0021, the Embodiments 1-13 in par. 0034-0046 and Embodiment 15 in par.0048).

The specification of the instant application defines the dipentaerythritol pentaacrylate as a photosensitive monomer having a double bond concentration within the range of 8 mmol/g to 11 mmol/g (see page 19, line 24 - page 20, line 7).

Therefore, the dipentaerythritol pentaacrylate of Sugiura et al. is “a photosensitive monomer having a double bond concentration within the range of about 8 mmol/g to about 11 mmol/g”, as required in claim 31.

“[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art’s functioning, does not render the old composition patentably new to the discoverer.” *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). (MPEP 2112. I. SOMETHING WHICH IS OLD DOES NOT BECOME PATENTABLE UPON THE DISCOVERY OF A NEW PROPERTY)

Therefore, the conductor paste of Sugiura et al. is equivalent to the photolithography photosensitive paste of claim 31 of the instant application.

With regard to claim 34, Sugiura et al. teach that the paste may comprise photopolymerizable compounds such as triethylene glycol diacrylate (par.0021), which meets the limitation for a “photosensitive monomer having an ethylene oxide structure with a degree of polymerization of about 3 or less”.

With regard to claim 36, Sugiura et al. teach that the paste is substantially solventless or contains less than 5% by weight of a solvent (par.0009).

With regard to claim 38, Sugiura et al. teach that the paste may comprise photopolymerizable compounds such as dipentaerythritol hexaacrylate (par.0021).

The specification of the instant application shows that dipentaerythritol hexaacrylate has a double bond concentration of 10.38 mmol/g (see Example 7 on page 31 and Table 2, page 67).

Therefore, the dipentaerythritol hexaacrylate of Sugiura et al. has a double bond concentration of 10.38 mmol/g (MPEP 2122) and meets the limitation of claim 38 for a “photosensitive monomer having a double bond concentration within a range of about 7.01 mmol/g to about 10.38 mmol/g".

The conductive powder of Sugiura et al. is not provided with an inorganic coating (see par.0016-0018).

5. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over as applied to claim 31 above, and further in view of Kubota et al. (US Patent 6,531,247).

With regard to claim 35, Sugiura et al. teach the paste of claim 31 (see paragraph 4 above). Sugiura et al. further teach that the paste may be exposed with ultraviolet (par.0031) but fail to teach that the paste comprises an UV absorber.

Kubota teaches a photosensitive paste (abstract), wherein the paste may be exposed in ultraviolet with a high-pressure mercury lamp (column 10, lines 1-2).

Kubota teaches that by mixing an ultraviolet absorber, the absorptivity of exposure light can be improved and the exposure failure due to light scattering can be minimized (column 4, lines 29-32).

Therefore, it would have been obvious to include the UV absorber of Kubota in the paste of Sugiura et al, in order to improve the absorptivity of exposure light and to minimize the exposure failure due to light scattering.

6. Claims 20, 23, 25-27, 29 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiura et al. (JP 2002-270036) in view of Felten (US Patent 4,598,037).

With regard to claims 20, 26 and 29, Sugiura et al. teach a photocuring conductor paste comprising:

- 75-90% by weight of a conductive powder material (par.0029 and par.0011), and

- 10-30% by weight of an organic vehicle (par.0029).

The organic vehicle comprises a photopolymerizable compound and a photopolymerization initiator in an amount of 0.1-30% by weight of the

photopolymerizable compound (par.0019 and par.0025). The organic vehicle may also comprise a polymeric binder in an amount of less that 10% by weight of the photopolymerizable mononomer (par.0025).

The photopolymerizable monomer of Sugiura et al. is equivalent to the photosensitive monomer of claim 20 and the polymeric binder of Sugiura et al. is equivalent to the polymer of claim 20 of the instant application.

Sugiura et al. do not specifically teach the photosensitive paste of claim 20 of the instant application.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain the paste of claim 20, based on Sugiura's teachings regarding the components of the paste and the amount of each component.

If the photopolymerization initiator is about 10% by weight of the photopolymerizable monomer (see Embodiments 1 and 2 in par.0034-0035) and the binder is 5% by weight of the photopolymerizable monomer (see the preferred range in par.0025), then the organic vehicle comprises:

- 87% by weight of the photopolymerizable monomer,

- 8.7 % by weight of the photopolymerization initiator and

-about 4.3 % by weight of the binder.

In this case, the ratio of a photopolymerizable monomer / (photopolymerizable monomer + binder) = 0.952, which satisfies the limitation of the ratio of photosensitive monomer/ (photosensitive monomer + polymer) of 0.90 of more of claim 20.

If the photosensitive paste contains 75% by weight of conductive powder (within the range of 75-90% by weight in par.0011 and par.0029) and 25% by weight of the organic vehicle (within the range of 10-30% by weight in par.0029) and the organic vehicle comprises 87% by weight of the photopolymerizable monomer, 8.7 % by weight of the photopolymerization initiator and about 4.3 % by weight of the binder, the paste comprises:

- 75% by weight of conductive powder, which is within the range for conductive powder of claim 20,

-about 22% of the photopolymerizable monomer, which is within the range of claim 20 for a photosensitive monomer, and

-about 2% of the photopolymerization initiator, which is within the range of claim 20 for a photopolymerization initiator.

Sugiura et al. further teach that the photopolymerizable monomer may be dipentaerythritol pentaacrylate (par. 0021, the Embodiments 1-13 in par. 0034-0046 and Embodiment 15 in par.0048).

The specification of the instant application defines the dipentaerythritol pentaacrylate as a photosensitive monomer having a double bond concentration within the range of 8 mmol/g to 11 mmol/g (see page 19, line 24 - page 20, line 7).

Therefore, the dipentaerythritol pentaacrylate of Sugiura et al. is “a photosensitive monomer having a double bond concentration within the range of about 8 mmol/g to about 11 mmol/g” (MPEP 2112).

Therefore, the conductor paste of Sugiura et al. is equivalent to the photosensitive paste of claim 20 of the instant application.

The conductor paste of Sugiura et al. is used for forming a film by exposure and does not need a solvent removing step after application (abstract).

Sugiura et al. teach a process of making a film, said process comprising steps of applying the paste on a substrate, exposing for curing the paste and baking the cured film (abstract) but do not teach a process of forming a pattern.

However, it is well-known in the art that a conductive paste may be used for obtaining fine lines and spaces in a process comprising the steps of:

- applying a layer of conductive material to a substrate by means of dispersion in a photosensitive medium;

- exposing the layer imagewise to actinic radiation;

- solvent developing the pattern to remove unexposed portions of the layer, and

- firing the remaining exposed portions of the pattern to remove all the organic material and to sinter the inorganic material (see Felten, column 1, lines 40-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the paste of Sugiura et al. in a process of forming fine lines and spaces, as taught by Felten, this process being clearly taught for a photosensitive conductive paste.

The step of “applying a layer of conductive material to a substrate by means of dispersion in a photosensitive medium” (see Felten, column 1, lines 43-44) is equivalent

to the step of “applying to a support a photosensitive paste so as to form a photosensitive paste film" of claim 20 of the instant application.

The step of “exposing the layer imagewise to actinic radiation” (see Felten, column 1, line 46) is equivalent to the step of “subjecting the photosensitive paste film to an exposure treatment” of claim 20 of the instant application.

The step of “solvent developing the pattern to remove unexposed portions of the layer” (see Felten, column 1, lines 46-47) is equivalent to the step of “developing the photosensitive paste film subjected to the exposure treatment so as to form a thick film pattern" of claim 20 of the instant application.

The solvent developing step (see Felten, column 1, line 47) meets the limitation of claim 26 of the instant application.

The step of firing the remaining exposed portions of the pattern to remove all the organic material and to sinter the inorganic material of Felten (column 1, lines 48-50) meets the limitations of claim 29 of the instant application.

With regard to claim 23, Sugiura et al. teach that the paste may comprise photopolymerizable compounds such as triethylene glycol diacrylate (par.0021), which meets the limitation for a “photosensitive monomer having an ethylene oxide structure with a degree of polymerization of about 3 or less”.

With regard to claim 25, Sugiura et al. teach that the paste is substantially solventless or contains less than 5% by weight of a solvent (par.0009).

With regard to claim 27, Felten teaches that the paste forms a pattern by imagewise exposure with actinic radiation (column 1, lines 43-46), which is equivalent to the exposure treatment with a photomask of claim 27.

Felten does not show that the mask is in contact with the paste. Therefore, it is the examiner's position that the limitation of claim 27 for "the photomask is kept from contacting the photosensitive paste film in the exposure step" is met.

With regard to claim 37, Sugiura et al. teach that the paste may comprise photopolymerizable compounds, such as dipentaerythritol hexaacrylate (par.0021).

The specification of the instant application shows that dipentaerythritol hexaacrylate has a double bond concentration of 10.38 mmol/g (see Example 7 on page 31 and Table 2, page 67).

Therefore, the dipentaerythritol hexaacrylate of Sugiura et al. has a double bond concentration of 10.38 mmol/g (MPEP 2122) and meets the limitation of claim 37 for a "photosensitive monomer having a double bond concentration within a range of about 7.01 mmol/g to about 10.38 mmol/g".

The conductive powder of Sugiura et al. is not provided with an inorganic coating (see par.0016-0018).

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiura et al. (JP 2002-270036) in view of Felten (US Patent 4,598,037) as applied to claim 20 and in further view of Kubota (US Patent 6,531,257)

With regard to claim 24, Sugiura modified by Felten teach the method of claim 20 (see paragraph 6 above) and Sugiura et al. further teach that the paste may be exposed with ultraviolet (par.0031).

However, Sugiura and Felten fail to teach that the paste comprises an UV absorber.

Kubota teaches a photosensitive paste (abstract), wherein the paste may be exposed in ultraviolet with a high-pressure mercury lamp (column 10, lines 1-2).

Kubota teaches that by mixing an ultraviolet absorber, the absorptivity of exposure light can be improved and the exposure failure due to light scattering can be minimized (column 4, lines 29-32).

Therefore, it would have been obvious to include the UV absorber of Kubota in the paste of Sugiura modified by Felten, in order to improve the absorptivity of exposure light and to minimize the exposure failure due to light scattering.

8. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiura et al. (JP 2002-270036) in view of Felten (US Patent 4,598,037) as applied to claim 20 and in further view of Iguchi et al. (US Patent 6,197,480).

With regard to claim 28, Sugiura modified by Felten teach the method of claim 20 (see paragraph 6 above) and Sugiura et al. further teach that the paste may be exposed with ultraviolet (par.0031).

However, Sugiura and Felten fail to teach that the exposure may be performed without a mask.

Iguchi et al. disclose a photosensitive paste including inorganic particles and organic components (abstract). Iguchi et al. further teach a process comprising the following steps:

- applying the paste to a film (column 12, line 37);

- exposing the paste, preferably with UV light (column 12, lines 45-62);

Iguchi et al. disclose direct pattern formation by means of a red or blue visible laser beam or Ar ion laser beam may be performed instead of using the mask (column 12, lines 51-53).

- developing (column 13, lines 25-27), and

- firing the pattern (column 13, line 55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the direct pattern formation of Iguchi et al. in the process of Sugiura modified by Felten, this type of exposure being clearly taught by Iguchi et al. for a photosensitive paste.

The direct pattern formation step of Sugiura modified by Felten and Iguchi is equivalent to the step of exposure without a mask of claim 28 of the instant application.

Response to Arguments

9. Applicant's arguments filed on September 08, 2011 have been fully considered but they are not persuasive.

On page 3 of the Remarks, the applicant argues that par.0034 and par.0035 of Sugiura et al. fail to suggest any specific amount of polymer or even that a polymer is or

could be included in the organic vehicle. Par.0025 of Sugiura et al. discloses that the organic vehicle *can* contain polymer but does not teach or suggest that the organic vehicle *must* contain a polymer.

The examiner agrees that the specific compositions in par.0034 and par.0035 (Embodiments 1 and 2) of Sugiura et al. do not comprise a polymer.

However, par.0025 of Sugiura et al. clearly teaches that the organic vehicle can contain a polymer as an organic binder, besides the photopolymerizable monomer and the photopolymerization initiator. The organic binder may be an acrylic resin, an epoxy resin, a phenol resin, an alkyd resin, a cellulose type polymer, polyvinyl alcohol. The organic binder is preferably less than 10wt%, more preferably less than 5wt% of the photopolymerizable monomer.

Therefore, one of ordinary skill in the art would have been motivated to add a polymer/organic binder in the paste composition of Sugiura et al., in an amount of less than 10wt%, more preferably less than 5wt% of the photopolymerizable monomer.

On page 3 of the Remarks, the applicant further argues that par.0025, par.0034 and par.0035 of Sugiura et al. fail to teach or to suggest a “photosensitive paste including a conductive powder, a photosensitive monomer, a photopolymerization initiator and a polymer” and “photosensitive monomer /(photosensitive monomer + polymer) is 0.90 or more”, as in claims 20 and 31.

The examiner would like to point out that par.0025 of Sugiura et al. clearly teach that a polymer/ organic binder may be included in the composition and the

polymer/organic binder is preferably less than 10wt%, more preferably less than 5wt% of the photopolymerizable monomer.

This teaching would motivate one of ordinary skill in the art to add a polymer/organic binder to the composition, in an amount of 5% by weight of the photopolymerizable monomer (see the preferred range in par.0025). In this case, the ratio of a photopolymerizable monomer / (photopolymerizable monomer + binder) = 0.952, which satisfies the limitation of the ratio of photosensitive monomer/ (photosensitive monomer + polymer) of 0.90 of more of claims 20 and 31.

On page 3 of the Remarks, the applicant argues that claims 20 and 31 have been amended to recite the feature of "the photosensitive paste include a photosensitive monomer having a double bond concentration within the range of 8 mmol/g to about 11 mmol/g".

On page 4 of the Remarks the applicant argues that par.0021 of Sugiura et al. teaches trimethylolpropane triacrylate, dipentaerythritol pentaacrylate or dipentaerythritol hexaacrylate but there is no evidence that these compounds are equivalent to the photosensitive monomer having a double bond concentration within the range of 8 mmol/g to about 11 mmol/g.

The examiner would like to show that Sugiura et al. teach that the photopolymerizable monomer may be dipentaerythritol pentaacrylate (par. 0021, the Embodiments 1-13 in par. 0034-0046 and Embodiment 15 in par.0048).

The specification of the instant application defines the dipentaerythritol pentaacrylate as a photosensitive monomer having a double bond concentration within the range of 8 mmol/g to 11 mmol/g (see page 19, line 24 - page 20, line 7).

The dipentaerythritol pentaacrylate of Sugiura et al. is identical to the dipentaerythritol pentaacrylate of the instant application and it would be expected to have the same properties. Therefore, the dipentaerythritol pentaacrylate of Sugiura et al. has a double bond concentration within the range of 8 mmol/g to 11 mmol/g (MPEP 2112).

On page 4 of the Remarks, the applicant further argues that Sugiura et al. fail to teach or suggest that a photosensitive conductive paste could or should include a photosensitive monomer having a double bond concentration within the range of 8 mmol/g to about 11 mmol/g or any advantages or benefits.

The examiner would like to show that most of the examples of Sugiura et al. (Embodiments 1-13 in par.0034-0046 and Embodiment 15 in par.0048) show dipentaerythritol pentaacrylate as the photopolymerizable monomer in the conductive paste.

These teachings would motivate one of ordinary skill in the art to obtain a paste wherein dipentaerythritol pentaacrylate is the photopolymerizable monomer.

The specification of the instant application defines the dipentaerythritol pentaacrylate as a photosensitive monomer having a double bond concentration within the range of 8 mmol/g to 11 mmol/g (see page 19, line 24 - page 20, line 7).

The dipentaerythritol pentaacrylate of Sugiura et al. is identical to the dipentaerythritol pentaacrylate of the instant application and it would be expected to have the same properties.

Therefore, the dipentaerythritol pentaacrylate of Sugiura et al. has a double bond concentration within the range of 8 mmol/g to 11 mmol/g (MPEP 2112) so the paste of Sugiura et al. comprises a photosensitive monomer having a double bond concentration within the range of 8 mmol/g to 11 mmol/g.

On page 4 of the Remarks, the applicant further argues that Sugiura et al. fail to teach or suggest that the organic vehicle must include both the polymer and a photosensitive monomer having a double bond concentration within the range of 8 mmol/g to about 11 mmol/g.

Par.0025 of Sugiura et al. clearly teaches that the clearly teach that a polymer/ organic binder may be included in the composition.

This teaching would motivate one of ordinary skill in the art to add a polymer/organic binder to the composition of the conductive paste.

Most of the examples of Sugiura et al. (Embodiments 1-13 in par.0034-0046 and Embodiment 15 in par.0048) use dipentaerythritol pentaacrylate as the photopolymerizable monomer in the conductive paste.

These teachings would motivate one of ordinary skill in the art to obtain a paste wherein dipentaerythritol pentaacrylate is the photopolymerizable monomer.

The specification of the instant application defines the dipentaerythritol pentaacrylate as a photosensitive monomer having a double bond concentration within the range of 8 mmol/g to 11 mmol/g (see page 19, line 24 - page 20, line 7).

The dipentaerythritol pentaacrylate of Sugiura et al. is identical to the dipentaerythritol pentaacrylate of the instant application and it would be expected to have the same properties.

Therefore, the dipentaerythritol pentaacrylate of Sugiura et al. has a double bond concentration within the range of 8 mmol/g to 11 mmol/g (MPEP 2112) so the paste of Sugiura et al. comprises a photosensitive monomer having a double bond concentration within the range of 8 mmol/g to 11 mmol/g.

On page 5 of the Remarks, the applicant argues that it would not have been obvious to combine the teachings of Felten with Sugiura et al. Sugiura et al. teach a solventless paste and Felten specifically teaches a step of solvent developing a pattern to remove unexposed portions of the layer. The applicant further argues that no one of ordinary skill in the art would combine the step of slovent developing a pattern to remove unexposed portions in the method of Sugiura et al. because such combination would render the method of Sugiura et al. unsatisfactory for its purpose (providing a conductive paste without needing a solvent removal process of application).

The examiner would like to show that Sugiura et al. teach a solventless paste, which has the advantage of not needing a solvent removing step after the application on the substrate (see abstract). Sugiura et al. teach against a step of removing the solvent after application (abstract).

The process of Felten comprises a step of solvent developing (column 1, lines 40-50), which is a step of providing solvent to an exposed paste in order to remove the unexposed areas.

The step of solvent developing of Felten is not equivalent to the step of solvent removal after application of Sugiura et al.

Additionally, the process of Felten does not require a step of removing a solvent after applying the conductive material on the substrate (see column 1, lines 40-50).

Therefore the process of Felten has the same feature as the process of Sugiura et al. : no solvent removing step after applying the composition to a substrate.

It would have been obvious to one of ordinary skill in the art to use the conductor paste of Sugiura et al. in the process of Felten, as the process of Feltem requires a conductive material and does not require removing of solvent after application on the substrate.

The invention of Sugiura et al. would not be render unsatisfactory if modified by Felten.

Conclusion

10. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANCA EOFF whose telephone number is (571)272-9810. The examiner can normally be reached on Monday-Thursday, 6:30 AM-4:00 PM, EST and Friday, 6:30-10:30 AM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Anca Eoff/

Primary Examiner, Art Unit 1722